

## NARROW BAND SHADOW ENCODER

### ABSTRACT

An audio signal is divided into a plurality of bands prior to generating a shadow. The shadow is created by delaying the portion of the audio signal in at least one band by  
5 less than fifty milliseconds and combining the shadow signal with the portion of the  
audio signal. The portions, with any shadows, are combined to produce a  
reconstructed audio signal. The presence or absence of a shadow signal represents  
data or the data is represented by two or more shadow signals, in one or more  
bands. The period of delay of a portion in a band should not equal the period of the  
10 center frequency of that band. Preferably, the period of delay of a portion in a band  
does not equal the period of any frequency within the pass band.